Using Sanitizers on Organic Fruit and Vegetable Farms — Merging National Organic Program Guidelines with Good Agricultural Practices

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Introduction

Using proper cleaning and sanitation practices are fundamental in maintaining produce quality and safety. Poor management at critical points in the flow of produce from field to market can magnify the potential for contamination of harmful microorganisms or foodborne pathogens to occur, remain and spread within the packing operation. Ultimately, sanitizers incorporated into sanitation and washing steps can be one of your best strategies to prevent foodborne pathogen transfer onto clean produce as it is packed. A sanitizer should be incorporated into postharvest handling: 1) during sanitation of tools, equipment and packing facilities, and 2) if washing produce.

This fact sheet focuses on using sanitizers while complying with the National Organic Program (NOP) standards. To learn more about two widely used sanitizers, chlorine and peroxyacetic acid, refer to UT Extension fact sheets SP 798-A "How To Use and Monitor Chlorine (Sodium/Calcium Hypochlorite) in Fruit and Vegetable Washwater and on Equipment" and SP 798-B "Using Peroxyacetic Acid (PAA) in Fruit and Vegetable Washing and Packing."

I'm an organic grower; what should I consider when selecting a sanitizer?

1. All sanitizers must have EPA registration and FDA clearance (21 CFR Part 173.315 or Generally Recognized as Safe (GRAS) status) for use in washing produce. Only food grade, EPA registered sanitizers should be used during produce washing or equipment sanitizing. During the registration process, the EPA reviews the compound's activity, toxicology and proposed label before it receives approval.

   All EPA labels will state for which uses a sanitizer has been approved. The uses most important to fruit and vegetable growers in postharvest handling include sanitizing food contact surfaces (equipment, tools, bins), sanitizing non-food contact surfaces (walls, floors, drains), and washing produce.

   Always make sure you are only using sanitizers that have an EPA approval number. For the sanitizer you use, record the EPA registration number, have a copy of the label for each intended use, and have records that demonstrate you are following the label with respect to the concentration of sanitizer used (and the monitoring records you must keep), contact time, and any special processes such as potable water rinses, as indicated by the label. Some sanitizers that are available over the counter, such as bleach, do not have an EPA registration number. These compounds may have fragrances

or additives that make them incompatible for washing produce or sanitizing food contact surfaces.

2. All synthetic sanitizers must be allowed on the National List of Allowed and Prohibited Substances (www.ams.usda.gov/rules-regulations/organic/national-list) maintained by the National Organic Program. Currently chlorine materials (calcium hypochlorite, sodium hypochlorite and chlorine dioxide), hydrogen peroxide and peracetic/peroxyacetic acid are on the national list and are commonly used in the produce industry as a sanitizer.

NOP clarification to using chlorine on organic farms

There has been some confusion as to which capacities and concentrations chlorine compounds can be used in organic operations. In 2011, the NOP released Guidance Document 5026, "The Use of Chlorine Materials in Organic Production and Handling" (www.ams.usda.gov/sites/default/files/media/5026.pdf) to help clear up this confusion. The NOP's guidance differentiates use of chlorine when applied to irrigation water or when washing produce versus sanitizing the packinghouse, equipment and harvesting tools.

- In preharvest activities, residual chlorine levels in water that is in direct contact with the produce or water used in irrigation system cleaning should not exceed the maximum residual disinfectant limit under the Safe Drinking Water Act (SDWA), currently set at 4 ppm residual chlorine (also known as total chlorine).

- In postharvest washing applications, including flume, spray and wash water, chlorine is permitted at FDA or EPA approved levels, immediately followed by rinsing with potable water that does not exceed the maximum residual disinfectant limit under the SDWA. Monitoring of chlorine levels in this final potable water rinse should occur at the point where the water last contacts the organic product, and the chlorine levels must not exceed 4 ppm. As always, corresponding records must be maintained to demonstrate compliance. It is important to understand that the risk for cross-contamination still exists during this potable water rinse since free chlorine concentrations are not maintained at levels that will readily inactivate foodborne pathogens. Given that this is a requirement for adherence to NOP guidelines, we would recommend using another sanitizer during postharvest washing.

- For disinfecting and sanitizing equipment, tools and packinghouse surfaces (floors, coolers, walls, drains), chlorine may be used up to the maximum labeled rates without any necessary steps before use in contact with organic crops.

Are there further considerations for commonly used sanitizers such as PAA?

Currently, PAA does not require a potable water rinse when used as a sanitizer during produce washing and can be used at the concentrations indicated on the label for all purposes on the farm. This is a benefit when compared to chlorine, since the potable water rinse does not contain sufficient concentrations of free chlorine to inactivate any bacteria that may come off during the rinse resulting in cross-contamination.

Conclusion

While both chlorine and PAA can be used in organic systems, each operation needs to decide how these sanitizers might best fit their system. It may also be beneficial to discuss any changes in sanitizer with their organic certifier.

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